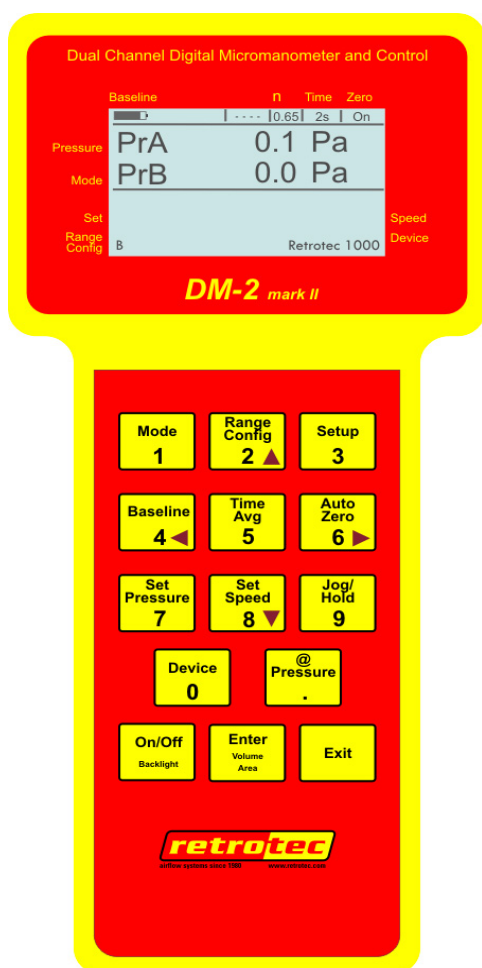
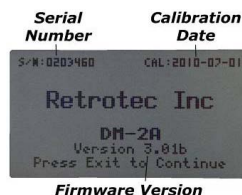


DM-2 mark II Digital Gauge



Step 1: Batteries

- 4 AA NiMH rechargeable batteries are supplied.
- Install by removing the lower compartment cover on the back of the DM-2.
- Fully charge the batteries on first use, but avoid prolonged charging.
- Press **[On/Off]** and the Retrotec screen shown below appears.



- The batteries are fully charged when the indicator is solid black.



Tip: The DM-2 will not start charging unless it is turned On.

- Non-rechargeable batteries can be used. To protect the DM-2 from damage, press **[Setup]**, scroll to "Battery Type" and select "Rechargeable" or "Not Rechargeable". Press **[Exit]** to save selection.

Tip: If "Not Rechargeable" is selected, no recharging will occur.

Warning: Non rechargeable batteries may explode if charged. Only charge rechargeable NiMH batteries.

The DM-2 has two independent differential-pressure sensors (Channel A and B) and an automatic controller that will control all Retrotec fans.

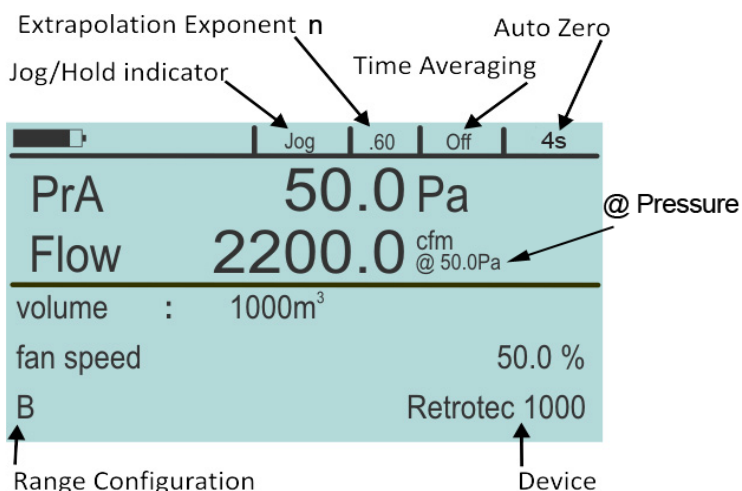
Channel A always displays the pressure difference between the blue "Input A" and the red "Ref A". "PrA" on the screen refers to Pressure on Channel A.

Channel B similarly measures pressure between the green "Input B" and the yellow "Ref B". This pressure, "PrB", is converted to flow or other units when a Device and Mode are selected. See Page 4 to change the enabled Devices and Modes.

The DM-2 includes:

- 1 — DM-2 Gauge
- 4 — AA NiMH rechargeable Batteries
- 1 — AC power adapter
- 1 — Laptop-style case
- 1 — Computer interface cable (mini-USB to USB)
- 1 — Color coded set of tubes and connectors
- 1 — Speed Control Cable to connect to Device

For the latest Retrotec documentation, visit us at: <http://www.retrotec.com>



Follow steps 1-15 to learn the basic gauge functions.



QuickGuide DM-2

Step 1: On/Off/Backlight

On / Off

Backlight

- Press **[On/Off]** to turn the DM-2 On.
- Press and hold **[On/Off]** to turn the DM-2 Off.
- When gauge is on press **[On/Off]** to turn the backlight on/off.

Tip: Leaving the backlight on discharges the battery at a faster rate.

Step 2: Exit

Exit

- Press **[Exit]** to:
- Clear the splash screen.
- Stop the fan and cancel Set Speed or Set Pressure mode.
- Clear and cancel the set Baseline.
- Move back or exit the Setup menus.
- Cancel Volume and Area inputs.
- Cancel other data entry.

Step 3: Enter

Enter

Volume Area

- Press **[Enter]** to acknowledge inputs and allow data entry:
- Change volume in Air Chg mode.
- Change area in Flow/Area and Leakage/Area modes.
- Accept indicated Baseline pressure.
- Accept input fan speed or pressure.

Step 4: Select Device

Device

0

The DM-2 calculates flows for all Retrotec, TEC and Infiltec fans. Choosing the right fan or flow device is required to get correct results.

- Press **[Device]** to scroll through the enabled fans.

Tip: From the factory, the Retrotec DU200, Retrotec 1000, Retrotec 2000 and Retrotec 3000SR are enabled. All other Devices are disabled. See Page 4 to add or remove Devices to save time and reduce errors.

Step 5: Select fan Range

Range Config

2

- Press **[Range Config]** to scroll through the enabled Flow Ranges for the currently selected device.

Warning: Selecting the incorrect range will yield incorrect results.

Tip: Disable the other Flow Ranges using **[Setup]** to save time and reduce errors.

Step 6: Select the Mode

Mode

1

- Press **[Mode]** repeatedly to scroll through the enabled results.
- The DM-2 supports on-the-fly calculation of all currently used results worldwide, including Flow, Air Changes, Leakage Areas, Normalized Leakage Area, Specific Leakage, Permeability and many others.

Tip: By default, Flow, Air Changes, and EqLA are enabled. All other results can be enabled manually from the Setup Menu. See Page 4.

Step 7: Explore Time Averaging

Time Avg

5

Results are averaged over the selected time period

- Time averaging should always be On.
- Press **[Time Avg]** to scroll through the possible time periods.

1s, 2s, 4s, 8s: Display updates every 1 second.

10s, 20s, 1min, 2min: Display updates every 10 seconds.

Step 8: Discover AutoZero

Auto Zero

6

When AutoZero is active, the gauge automatically zeros itself every 8 seconds, even while making measurements.

- Press **[Auto Zero]** until "On" appears.
- AutoZero must be left on under normal operation.

Tip: Auto Zero can be turned off to conserve batteries when not taking readings.

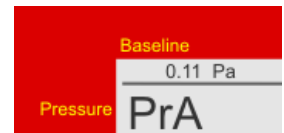
Step 9: Learn about Baseline mode

Baseline

4

Remove bias/offset/background/Baseline pressures due to wind or stack that are present before test pressures are applied.

- Press **[Baseline]** to begin sampling and press **[Enter]** after 15 to 60 seconds.
- The displayed Baseline pressure is subtracted from all future readings.
- Pressing **[Exit]** at any time will clear the Baseline.



QuickGuide DM-2

Step 10: The @ Pressure extrapolation



Fig 1: Fan adjusted to achieve exactly 50 Pa

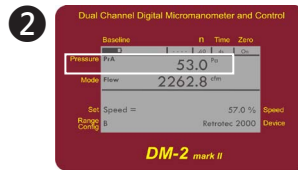
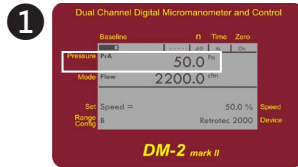


Fig 2: Fan adjusted to achieve about 50 Pa

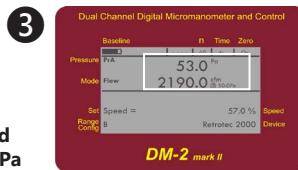


Fig 3: @-mode enabled to estimate flow @ 50 Pa

- **[@ Pressure]** provides an estimate of the results (e.g. Flow) at a target pressure, even if the exact pressure has not been reached.
- If the fan is running in Set Speed mode, press **[@ Pressure]** until “@50 Pa” (or the value set in the Mode Setup sub-menu) appears. The results are now displayed as if the pressure is 50 Pa.
- If the fan is running in Set Pressure mode, press **[@ Pressure]** once to view the results at the target pressure. If the Set Pressure is 35 Pa, then “@35 Pa” is displayed. Press **[@ Pressure]** a second time and “@50 Pa” (or the value set in the Mode Setup sub-menu) appears.
- Press **[@ Pressure]** again to clear the @ value, and view the results at the current pressure.

Step 11: Set fan speed using gauge



The fan speed of all current Retrotec fans can be controlled automatically by the DM-2. Connect the fan to the gauge with the Ethernet style Speed Control Cable

- Press **[Set Speed]**, input a desired percent speed between 1-100. Press **[Enter]**. The fan will accelerate and hold at the set speed.
- Press **[Exit]** to stop the fan and cancel the set speed.
- Press **[Set Speed] [0] [Enter]** to stop the fan, without clearing the Baseline or Set Pressure.

Step 12: Automatically control to a pressure



The DM-2 can automatically control the fan speed to reach a target pressure on any current Retrotec fan.

- Press **[Set Pressure]**, input a desired test pressure, and press **[Enter]**. The fan will accelerate to reach the set pressure.
- The DM-2 adjusts the fan speed to hold the set pressure, even if the enclosure changes (i.e. opening/closing windows/doors, air sealing).
- Press **[Exit]** to stop the fan and cancel the set pressure.
- If pressure is set to “0”, the DM-2 will adjust the fan speed to bring the existing pressure to zero.

Warning: Do not use the “@ Pressure” functions when Set Pressure is 0.

Step 13: Hold display and jog speed



Use “Jog” to activate arrow keys **[▲]** **[▼]** then adjust target speed or pressure. Use “Hold” to freeze results display and hold fan speed.

- Press **[Jog/Hold]** until “Hold” appears in top center of display.

The display will be frozen with the current values.

- Press **[Jog/Hold]** again to cancel “Hold”.
- Press **[Jog/Hold]** until “Jog” appears.
- The **[▲]** **[▼]** keys now adjust the speed just like a TV remote. With **[Set Speed]** the % speed changes. With **[Set Pressure]** the pressure changes.

“Jog” is only available when **[Set Pressure]** or **[Set Speed]** have a value entered.

Step 14: System reset if gauge locks up

- If the gauge stops responding, press **[Reset]** for 2 seconds, then turn the gauge back on.



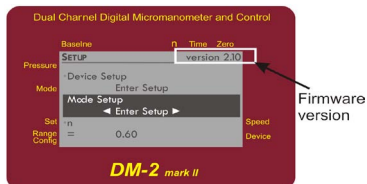
QuickGuide DM-2

Set up gauge

Setup

3

The Setup Menu provides configuration options for all of the DM-2's functions and capabilities. Depending on the firm ware version, some options may not be available. Properly setting up the gauge can eliminate confusion and incorrect results.



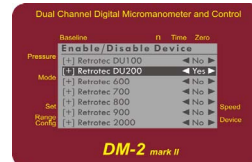
- Press **[Setup]** to view the main setup menu.
- Use the **[▼]**, **[▲]**, **[◀]**, and **[▶]** to navigate around the menu. Press **[Enter]** to enter a sub-menu or to change a configurable numeric value.
 - **n**: sets the slope of the @-Pressure extrapolation line. Use 0.65 for tight houses and 0.60 for ducts and large buildings.
 - **Power Down Hour**: If the DM-2 remains inactive for this length of time, it turns off automatically. The DM-2 will never turn off if a value of "0" is entered.
 - **Surface Area Unit**: For building envelope or floor areas used in Flow or Leakage Area per Building Area results.
 - **Building Volume Unit**: Units for volume used in air-change calculations.
 - **European, Separator**: "No" displays one thousand as "1.000", "Yes" displays one thousand as "1,000".
 - **Sig Figs**: Eg. 1134 is displayed as 1135 for 3.5 **Significant Figures**, 1130 for 3.0 and 1150 for 2.5.
 - **Device Setup**: Add or remove Devices and Ranges.
 - **Mode Setup**: Add or remove Modes, set units.
 - **Full Screen Timeout**: If no keys are pressed, the DM-2 will change to the large format screen after this length of time.
 - **Restore Settings**: Select "Yes" to restore the gauge to factory settings upon leaving the Setup Menu.
 - **Language**: Choose the language displayed.
 - **Battery Type**: Choose rechargeable or not rechargeable.
 - **Display Version Info**: Select "Yes" to view the current DM-2 version information. Press **[Exit]** to return to the Setup Menu.
- Press **[Exit]** to return to the main screen.



Add/remove Devices

The Device Setup sub-menu allows fans and ranges to be added or removed from the selections available when **[Device]** is pressed. Eliminate all unused Devices to avoid confusion.

- Press **[Setup]** and then **[▼]** until "Device Setup" appears. Press **[Enter]** to view available Devices.
- Scroll through the Devices. Press **[▶]** to select "Yes" to add, or "No" to remove.
- Press **[Exit]** twice to return to the main screen.



Warning: At least one fan must be enabled for correct DM-2 behavior!

Enable:

- "Retrotec DU200" for DU200 DucTester system
- "Retrotec 1000" for 1000 systems
- "Retrotec 2000" for Q46 and Q56 systems
- "Retrotec 3000SR" for Q4E, Q5E, and QMG Door Fan systems with green and yellow connection ports on the fan.

Add/remove Ranges

Unused ranges may be removed to speed up cycling between useful ranges.

- Select a fan from the Device Setup sub-menu, press **[Enter]** to view the possible ranges for that device.
- Scroll through the possible ranges. Press **[▶]** to select "Yes" to add a range, or "No" to remove a range.
- Press **[Exit]** once to return to the Device Setup sub-menu, three times to return to the main screen.

Enable/disable results Mode

Use the Mode Setup sub-menu to add or remove displayed results (Flow, EqLA, ACH, etc.), to select units and to change the default extrapolation pressures that appear when **[@ Pressure]** is used.

- Press **[Setup]** and then **[▼]** until "Mode Setup" appears. Press **[Enter]** to view all modes that will be available when **[Mode]** is pressed.
- Scroll through possible modes. Press **[▶]** to select units or select "Off"; that mode will not appear.
- Most modes have an associated "@Pressure", the pressure to which the displayed results will be extrapolated when **[@ Pressure]** is pressed.
- To change the "@Pressure", press **[Enter]** and input a value between **[1-200]**, then press **[Enter]** again to save.
- Press **[Exit]** twice to return to the main screen.
- Pressure cannot be disabled. All other results can be disabled.